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SUBJECT: **Evidence Summary Memorandum for Carlyle Site**

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1. Introduction

Revitalizing Auto Communities Environmental Response (RACER) Trust and Knauf Shaw LLP (Knauf Shaw) contacted TIG Environmental¹ to provide consulting services regarding potentially responsible party (PRP) identification and investigation, sampling and data analysis, and expert witness testimony to support RACER Trust and Knauf Shaw during litigation proceedings stemming from a Civil Action No.: 5:18-cv-1267 [DNH/ATB] filed on October 26, 2018 (the Complaint) (RACER 2018).

In the Complaint, RACER Trust, by its attorneys, Knauf Shaw LLP, brings claims for cost recovery and contribution under Sections 107(a) and 113(f) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 U.S.C. 9607(a) and 9613(f), inter alia, against parties (Defendants) operating in or around the Ley Creek Watershed Site (Study Area) in Onondaga County, New York. The Complaint asserts that the Defendants are responsible to contribute to the cost of past and future investigations to address contamination in and around the Study Area.

The Study Area consists of the GM-Inland Fisher Guide Facility (GM-IFG) Sub-Site Operable Unit 1 (OU-1), the expanded OU-2 area (Ley Creek from Townline Road west to Route 11, including creek banks and limited floodplain and hotspot areas), and tributaries upstream of Townline Road bridge.

As defined in the Record of Decision (ROD) for OU-2, the identified contaminants of concern (COCs) in the Study Area are polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), chromium, copper, lead, nickel, and zinc (NYSDEC and EPA 2015). PCBs are the predominant contaminants in Ley Creek sediments (NYSDEC and EPA 2015).

¹ TIG Environmental is a member of The Intelligence Group, LLC.

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In this evidence summary memorandum (ESM), TIG Environmental reviewed evidence gathered by RACER Trust and Knauf Shaw to evaluate the following for each Defendant's site:

- Documented and suspected PCB usage at the Defendant's site
- The existence of PCB-containing electrical equipment or electrical substations (utility- or Defendant-owned) on the Defendant's site
- Whether pathways exist between the Defendant's site and the Ley Creek watershed (defined as Ley Creek and its tributaries)

Sections 2 through 4 summarize the available information on Defendant operations related, or potentially related, to PCB usage; detections of contaminants at or related to the Defendant's site; permits, waste handling, spills, and/or releases at each Defendant's site; whether pathways from the Site to Ley Creek watershed can be determined; data gaps; and proposed sampling to address identified data gaps. Defendant information, site ownership information, and dates of operation for the Defendant's site are available in Knauf Shaw's site dossier (Knauf Shaw Carlyle Site Dossier).

2. Description of Site Operations Related to PCBs

The Carlyle Site (the Site) is located at 6500 New Venture Gear Drive, East Syracuse, NY. Since 1960, Carlyle Air Conditioning Company Inc. (Carlyle) has manufactured reciprocating compressors² as components for air conditioners (Knauf Shaw Carlyle Site Dossier, 1). Transformers were used onsite to facilitate the production of the reciprocating compressors (Knauf Shaw Carlyle Site Dossier, 2–3).

Evidence of PCBs at the Site is provided by the New York State Department of Environmental Conservation (NYSDEC) waste manifest database records, which indicate that Carlyle generated and disposed of approximately 59,800 kilograms (kg) (approximately 131,800 pounds [lbs]) of PCB-containing wastes from 1986 to 1993 (Knauf Shaw Carlyle Site Exhibit D, 1–2). Records for PCB wastes generated at the Site from 1960 to 1986 are absent from documents available for review.

Compressors and transformers are commonly associated with PCB-bearing materials, including dielectric fluids, lubricants, and hydraulic oils (DEQ 2003, 3–4; Erickson and Kaley 2011, 2, 5, 7–10). Based on industry practices, dielectric fluids used in transformers are typically associated with PCB Aroclors³ 1254 and 1260 (Erickson and Kaley 2011, 9). Aroclors 1242 and 1016 have been used in transformers to a lesser extent (Erickson and Kaley 2011, 5, 9–10). Transformers can contain up to 3,000 gallons of oil made of 40 to 70 percent PCBs (Erickson and Kaley 2011, 9; EPA 2004, 58). Compressors typically used Aroclors 1221

² A reciprocating compressor uses a piston and cylinder to compress air or gas into a smaller space, resulting in increased air or gas pressure (Bloch and Hoefner 1996, 26).

³ Beginning in 1935, Swann Chemical Company, followed by the Monsanto Company, produced commercially available PCB-containing goods in a line of products known as "Aroclors." Each of the 10 common PCB Aroclor mixtures are generally associated with certain signatures of PCB congeners (there are 209 PCB congeners) (Erickson and Kaley 2011, 2–3). The style of reporting analytical data for PCBs varies in reviewed documentation. Results may be reported as individual Aroclors and/or congeners, as a sum of all or some of these analytes, or simply as "PCBs." For purposes of this memorandum, TIG Environmental will state "total PCBs" when the source document has reported analytical results as either "PCBs" or "total PCBs." This is presumed to represent the sum of PCB Aroclors or congeners. TIG Environmental will report Aroclor- or congener-specific data where that information is available.

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and 1242 in lubricants, as well as a PCB-containing hydraulic fluid manufactured by Monsanto, known as Pydraul (Erickson and Kaley 2011, 5, 9). Since Monsanto customized Pydraul⁴ for specific applications,⁵ the specific PCB Aroclor signature associated with Pydraul use at the Site, if any, is unknown (Erickson and Kaley 2011, 5).

Metal working is an additional potential source of PCBs onsite. Pressing, cutting, shearing, rolling, spinning, and bending metals may have been associated with compressor manufacturing (EPA 1995, 25, 35). Hydraulic and cutting oils are often used in conjunction with these metal-related operations and commonly contained PCBs (EPA 1995, 25, 35; EPA 1976, 43; Erickson and Kaley 2011, 5, 9).

While no PCB data from site sampling activities are available for review, an organic solvent groundwater contaminant plume covering an area of approximately 260,000 square feet (sq ft) is present in the southwest corner of the Site (Knauf Shaw Carlyle Site Dossier, 2). The source of the plume is believed to be an unspecified number of leaking drums stored outdoors at the property (Knauf Shaw Carlyle Site Exhibit A, 1). Sometime between 1997 and 1998, Carlyle installed and operated a combined pump and treat system as well as a soil vapor extraction system under an interim remedial measure (IRM) to remediate groundwater contamination (Knauf Shaw Carlyle Site Dossier, 2; Knauf Shaw Carlyle Site Exhibit A, 1, 3). Prior to the installation of the combined pump and treat system and the soil vapor extraction system, the groundwater plume seeped into Sanders Creek, a tributary of Ley Creek (Knauf Shaw Carlyle Site Exhibit A, 1). In February 1999, a remedial investigation/feasibility study was completed. On March 30, 1999, a ROD was signed, and the Site was designated New York Superfund Site #734043 (Knauf Shaw Carlyle Site Dossier, 2).

There is no record of sampling for PCBs in onsite media in reviewed documents; therefore, the presence of PCBs in site media cannot be confirmed or denied.

2.1 Discharge Permits, Waste Handling, and/or Spills at the Site

2.1.1 Discharge Permits

No discharge permits were identified for the Site.

2.1.2 Waste Handling Related to PCBs

Even though there is limited evidence regarding exactly how PCBs were used at the Site, NYSDEC waste manifest database records confirm that Carlyle generated and disposed of the following PCB-containing wastes from 1986 to 1993. The waste handling and disposal records available do not indicate specific Aroclor content (Knauf Shaw Carlyle Exhibit D, 1–2):

- In 1986, Carlyle disposed of 165 gallons (652.5 kg) of PCB oil (between 50 and 500 parts per million [ppm]) (B002)⁶ (Knauf Shaw Carlyle Exhibit D, 1).

⁴ Pydraul fluids were manufactured using hydrocarbon oils, phosphate esters, rust inhibitors, viscosity modifiers, colorants, blends of Aroclors, and other chemicals (Erickson and Kaley 2011, 5). Pydraul is a registered trademark of Monsanto (Monsanto 1995, 1, 8).

⁵ A complete list of applications is not available, however Pydraul AC was associated with the use of air compressors (Erickson and Kaley 2011, 5).

⁶ Waste is classified according to 6 CRR-NY 371.4 (e). Wastes classified as B001–B007 contain polychlorinated biphenyls (PCBs) (6 NYCRR Part 375) (NYSDEC 2006).

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- From 1986 to 1993, Carlyle disposed of approximately 623 kg of other PCB wastes (B007)⁷(Knauf Shaw Carlyle Exhibit D, 2).
- In 1990, Carlyle disposed of 134 kg of PCB-contaminated articles (between 50 and 500 ppm) (B004) (Knauf Shaw Carlyle Exhibit D, 2). Although the “articles” are not specified, waste code B004 designates the disposal of electrical equipment excluding small capacitors containing oil with a concentration of PCBs between 50–500 ppm (NYSDEC 2018, 37).
- In 1991, Carlyle disposed of 45 kg of PCB-contaminated articles (over 500 ppm) (B005) (Knauf Shaw Carlyle Exhibit D, 2). Although the “articles” are not specified, waste code B005 designates the disposal of electrical equipment excluding transformers or small capacitors containing oil with a concentration of PCBs greater than 500 ppm (NYSDEC 2018, 40).
- In 1993, Carlyle disposed of 36,316 kg of PCB transformers (containing oil with over 500 ppm) (B006) (Knauf Shaw Carlyle Exhibit D, 2).
- In 1993, Carlyle disposed of 445 kg of PCB oil (over 500 ppm) (B003) (Knauf Shaw Carlyle Exhibit D, 1).
- In 1993, Carlyle disposed of 21,608 kg of concentrated PCB oil from transformers (B001) (Knauf Shaw Carlyle Exhibit D, 1).

2.1.3 Spills Related to PCBs

Two releases related to, or potentially related to, PCBs have occurred at the Site:

- On August 17, 1988, a transformer shorted out, resulting in the release of two to four gallons of PCB transformer oil to site soils (Knauf Shaw Carlyle Site Dossier, 2; Knauf Shaw Carlyle Site Exhibit B, 1). Carlyle filed Spill Report #8804337 with NYSDEC and the PCB transformer oil was reportedly cleaned up by Niagara Mohawk, a utility company, the same day (Knauf Shaw Carlyle Site Exhibit B, 1). Niagara Mohawk, the local utility company, was the owner of the transformer and, therefore, responsible for the cleanup (Knauf Shaw Carlyle Site Exhibit C, 100; Energy Online 2000). The spill report does not indicate whether any of the PCB transformer oil was discharged to Sanders Creek, a tributary of Ley Creek.
- On September 30, 1988, an unknown volume of an unknown petroleum product was released to Sanders Creek, a tributary of Ley Creek (Knauf Shaw Carlyle Site Dossier, 2). The spill was reported to NYSDEC (Spill Report #8805672) (Knauf Shaw Carlyle Site Exhibit C, 71). While there is no indication that the spill was cleaned up, the spill report record was closed on October 6, 1988 (Knauf Shaw Carlyle Site Exhibit C, 71). Based on NYSDEC waste manifests, PCB-contaminated wastes were handled at the property during the time of this release (Knauf Shaw Carlyle Site Exhibit D, 1–2); therefore, the release of the unknown petroleum product could have potentially contained PCBs.

2.2 PCB Discharges to Ley Creek or Tributaries

This section discusses the documented or potential discharge pathways of PCBs from the Site, with emphasis on discharges to Ley Creek or its tributaries.

⁷ Other PCB wastes may include contaminated soils, solids, sludges, clothing, and rags (Knauf Shaw Carlyle Site Exhibit D, 2).

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2.2.1 Direct Discharge

As described in Section 2.1.3, on September 30, 1988, an unknown volume of an unknown petroleum product was released to Sanders Creek, a tributary of Ley Creek (Knauf Shaw Carlyle Site Exhibit C, 71). While the type of petroleum product released was not specified in available documents, Carlyle's use of PCBs at the Site, as evidenced by NYSDEC waste manifest database records (Knauf Shaw Carlyle Exhibit D, 1–2), indicates the petroleum product could have potentially contained PCBs.

2.2.2 Sanitary Sewer

No information is available to characterize the documented or potential direct discharges from the Site via sanitary sewers.

2.2.3 Storm Sewer

No information is available to characterize the documented or potential direct discharges from the Site via storm sewers.

2.2.4 Runoff

This section discusses the documented or potential PCB-containing discharges from the Site to Ley Creek or its tributaries via stormwater runoff.

Sanders Creek is directly adjacent to the east, north, and portions of the west side of the Site (Knauf Shaw Carlyle Site Dossier, 1–2). Given the evidence of the release of oil from the Site to Sanders Creek on September 30, 1988, runoff potentially contacting contaminated site soil likely discharges to Sanders Creek, a tributary of Ley Creek (Knauf Shaw Carlyle Site Exhibit C, 71).

2.2.5 Groundwater

This section discusses the documented or potential PCB-containing discharges from the Site to Ley Creek or its tributaries via groundwater.

An organic solvent groundwater plume is located in the southwest portion of the Site (Knauf Shaw Carlyle Site Dossier, 2). Based on reviewed documents, the groundwater plume was not sampled for PCBs.

3. Data Gaps

TIG Environmental has identified the following data gaps, resolution of which would increase the understanding of how PCBs were used onsite and/or released from the Site.

- Detailed information regarding Site operations is not provided in reviewed documents.
- The historical and current locations of transformers at the Site are not provided in reviewed documents.
- A remedial investigation (RI) was completed in 1999 for Operable Unit OU-01, a remedial design project was completed in 1997 for OU-01A, and a remedial action project was completed in 1998 for OU-01A on unknown portions of the Site and is associated with New York State Superfund Site Code #734068 (Knauf Shaw Carlyle Site Exhibit A, 3). However, the associated reports were not provided in reviewed

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documents. These documents apparently exist and would provide further information on site history and potential contamination.

- Recommendation: Request the RI report from NYSDEC Region 7 office, located at 615 Erie Boulevard West, Syracuse, NY 13204 as indicated in reviewed documents.
- A ROD signed on March 30, 1999, is identified in the Carlyle Site Dossier; however, this document was not available for review.
 - Recommendation: Request a copy of this ROD from the RACER Trust.
- The Site's sanitary and storm sewer networks, including outfalls or other discharge points, are not discussed in reviewed documents and are currently unknown. This data gap limits the assessment of potential pathways from the Site to Sanders Creek.
 - Recommendation: Review incoming sewer data to attempt to identify these features.
- Based on the limited documentation available for the Site, the location of site features, such as outfall and transformer locations, remain unknown. Further, there are no available site plans of the facility indicating onsite process areas or other site features. This data gap limits the assessment of discharge pathways via stormwater and sanitary sewers, other drainage features, and soil from the Site to Sanders Creek, a tributary of Ley Creek.
- There is no record of sampling for PCBs in onsite media in reviewed documents; therefore, the presence of PCBs in site media cannot be confirmed or denied. This data gap limits the assessment of any potential contamination resulting from the use of PCB-containing liquids and equipment at the Site.

4. Proposed Sampling to Assess Contributions to the Study Area

Because of the data gaps identified in Section 3, TIG Environmental proposes additional sampling at the Site, as described below. The sampling locations should be analyzed for PCB Aroclors (EPA Method 8082A), PCB congeners (EPA Method 1668C), total organic carbon (Lloyd Kahn method), grain size (ASTM D422), and total solids (ASTM D2216-98). In addition to those parameters, TIG Environmental may also propose sampling for particular contaminant classes (that is, metals, PAHs, volatile organic compounds [VOCs], and semivolatile organic compounds [SVOCs]), depending on the nature of operations surrounding a particular sampling location.

4.1 Soil

An organic solvent groundwater plume with an area of 260,000 sq ft is located in the southwest corner of the Site. The source of the plume is thought to be spills or leaks from various drums, stored in unpaved area of the back lot, that seeped into the shallow groundwater aquifer. Although not specifically stated in reviewed documents, it is possible drums of PCB-containing materials were also stored in this area, which also could have leaked to the ground surface. Two soil sample locations have been proposed in the area of the plume to determine whether soils coming into contact with the plume are contaminated with PCBs.

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4.2 Sediment

Sediment sampling is proposed at three locations in Sanders Creek to quantify PCB contamination in Sanders Creek and to determine whether any differentiation can be made between the contributions from Carlyle's operations and the contributions from the upstream New Venture Gear Site. These locations may be revised if outfalls or other discharge or drainage features and/or findings are observed during the site reconnaissance.

5. References

This ESM was prepared using the evidentiary materials listed below and provided with this document.

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Monsanto (Monsanto Company). 1995. Material Safety Data Sheet for Polychlorinated Biphenyls (PCBs).

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